Family Environment, Child Temperament, and Callous-Unemotional Behaviors in Early Childhood

Undergraduate Research Thesis

Presented in partial fulfillment of the requirements for graduation with research distinction in Psychology in the undergraduate colleges of The Ohio State University

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April 2021

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Abstract

Callous-unemotional (C-U) behaviors include a lack of empathy, guilt, and emotion, and predict antisocial behaviors in adolescence and adulthood. By identifying C-U behaviors in early childhood, it is possible to pinpoint signs of future antisocial behaviors, intervene early, and therefore minimize the chances of the child growing up to engage in behaviors and illegal activities that are costly to society. Whether or not a child develops C-U behaviors is likely determined by an interplay of risk and protective factors. The goal of this study was to contribute to a better understanding of the origins of C-U behaviors by examining the contributions of child temperament and aspects of the family environment to C-U behaviors in early childhood. I recruited 86 mothers via Facebook groups who were the biological parents of children ages 4 to 7, and who were either married or cohabiting with their child's father. Participants completed an online survey that included validated measures of child temperament, mother-child relationship quality, coparenting relationship quality, and children's callous-unemotional behaviors. Correlation analyses confirmed hypothesized associations of greater child temperamental negative affectivity and lower effortful control with greater child C-U behaviors. In addition, higher conflict and lower positivity in the mother-child relationship, and greater undermining and less support in the coparenting relationship were also associated with greater C-U behaviors in children. Hierarchical regression analyses revealed that coparenting relationship quality does contribute to child C-U behaviors above and beyond the child's temperament and mother-child relationship quality.

Keywords: Callous-unemotional behaviors, child temperament, parenting, coparenting

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Literature Review

Callous-unemotional (C-U) behaviors include a lack of empathy, guilt, and emotion (Viding, n.d.). It is important to study C-U behaviors because these behaviors in childhood tend to predict further antisocial behaviors in adolescence and even in adulthood. These antisocial behaviors include violence, drug use, aggression, and theft (Waller & Hyde, 2017). C-U behaviors can be identified as early as three years of age (Waller & Hyde, 2017). By studying C-U behaviors in early childhood, it is possible to identify signs of future antisocial behaviors and potentially minimize the chances of the child growing up to engage in behaviors and illegal activities that are costly to society. Early intervention is successful in changing these behaviors and/or preventing them from resulting in antisocial behavior later on (Waller & Hyde, 2017).

Whether or not a child develops C-U behaviors is likely determined by an interplay of many risk and protective factors (Luthar, Cicchetti, & Becker, 2000). For example, child characteristics (e.g., temperament) and the family environment (e.g., warmth of parenting), have been implicated in the development of C-U behaviors (Waller & Hyde, 2017). However, there is still much to learn about the ways in which child characteristics and multiple aspects of the family environment contribute to the development of C-U behaviors, especially during the preschool years. The goal of this research was to contribute to a better understanding of the origins of C-U behaviors in early childhood. In particular, the goal was to better understand the contributions of child temperament, parenting, and coparenting to child C-U behaviors during ages 4 to 7, and to test whether coparenting relationship quality contributes to C-U behaviors above and beyond effects of child temperament and mother-child relationship quality.

Child Temperament and Callous-Unemotional Behaviors

Temperament includes individual differences in emotion, activity, and attention that are present very early in life and thought to be genetically based (Siegler et al., 2017). The temperament of a child has an important role in C-U behaviors. Three aspects of child temperament during the preschool years include surgency, negative affect, and effortful control. Surgency is defined as an individual's activity level, impulsivity, and positive emotions (Zastrow, Martel, & Widiger, 2018). Negative affect is defined as the tendency to experience negative emotions (i.e., anger, discomfort, fearfulness, and sadness; Zastrow et al., 2018). Effortful control is defined as an individual's attention/focus, inhibitory control, and perception sensitivity (Zastrow et al., 2018).

Each of these three aspects of temperament has been linked to children's behavioral adjustment in past research. Greater surgency has been associated with higher Child Behavior Checklist (CBCL) externalizing scores reported by parents (Achenbach & Rescorla, 2001; Ezpeleta et al., 2013). High surgency is also associated with argumentative, angry, defiant, and irritable symptoms of oppositional defiant disorder (ODD) among preschool-aged children (Zastrow et al., 2018). Higher negative affect is related to elevated levels of internalizing problems, such as symptoms of anxiety and depression (Ezpeleta et al., 2013). These emotions are also associated with disruptive disorders, such as anxiety and conduct disorders, in young children (Ezpeleta et al., 2013). In contrast, greater effortful control has been inversely linked with externalizing problems among children. In particular, the lower the levels of effortful control in preschool-aged children, the higher levels of externalizing problems at age 5 (Schoppe-Sullivan et al., 2009). Low effortful control has also been associated with attention problems (Ezpeleta et al., 2013). Elizur et al. (2017) tested the effects of parenting interventions

on children with C-U behaviors and on child's effortful control with a sample of 3 to 5-year-old children with past conduct problems. The study concluded that parenting and early intervention programs can change a child's temperament in early childhood to help reduce future behavior disorders (Elizur et al., 2017).

Parent-Child Relationships and Callous-Unemotional Behaviors

The family environment also plays a role in the development of C-U behaviors in early childhood. One important aspect of the family environment includes parent-child relationships. Parenting has been implicated theoretically in the development of C-U behaviors in children. The idea is that when children experience unpleasant interactions with caregivers (i.e., harsh, insensitive, or unresponsive parent behaviors), the child is more likely to develop unrealistic views of themselves and others, which affects the development of their emotions (Wagner et al., 2015). These emotions include the self-conscious emotions of empathy and guilt, and the lack of these emotions are characteristic of C-U behaviors. In contrast, positive aspects of the parent-child relationship, such as supportive presence, shared positive affect, and sensitivity (Driscoll & Pianta, 2011) may support the development of positive views of self and others and appropriate self-conscious emotions, therefore protecting against the development of C-U behaviors.

Much research has been done on the effects of mothers' parenting on C-U behaviors in early childhood. Results indicate that a mother's parenting has an important effect on the child developing C-U behaviors or continuing to exhibit those behaviors over time (Waller & Hyde, 2017). Parental sensitivity, harsh intrusion, and insecure attachment all appear to be associated with C-U behaviors, which suggests that parenting and the quality of the parent-child relationship contribute to the development of C-U behaviors in multiple ways (Glenn, 2018; Wagner et al., 2015). Importantly, the role of mothers' parenting in children's C-U behaviors is

not limited to mothers and children who are genetically related. Trentacosta and colleagues (2019) collected data from adopted preschool-aged children, their adoptive parents, and their biological mothers, and demonstrated that adoptive mothers' harsh parenting had a reliable positive association with C-U behaviors among children at higher inherited risk of C-U behaviors. In a twin study conducted by Waller et al. (2018), mothers' increased harshness towards one of the twins had an association with that child's aggression (Waller et al., 2018); the twin that received harsher parenting was also the twin who was more aggressive (Waller et al., 2018). Moreover, another adoption study showed that even if a child is genetically predisposed to develop C-U traits, an adoptive mother's warmth can reverse these traits (Hyde et al., 2016).

Coparenting Relationships and Callous-Unemotional Behaviors

While parenting has been largely researched in association with callous-unemotional behaviors, coparenting has not been as widely investigated. Coparenting refers to "the ways that parents and/or parental figures relate to each other in the role of parent" (Feinberg, 2003, p. 96). In other words, coparenting relationships focus on the aspects of the interparental relationship related to parenting and not any other parts of the relationship (Feinberg, 2003). Similarly, coparenting relationships are distinct from the individual parent-child relationships each parent has with a shared child. Key aspects of coparenting include the extent to which parents support or undermine each other's parenting efforts and relationship with the child (Schoppe-Sullivan et al., 2009). In theory, coparents who demonstrate supportive (i.e., warm and cooperative) interactions with one another and refrain from engaging in undermining (i.e., hostile, critical, and competitive) behavior may affect their children's behavioral adjustment via several pathways (Feinberg, 2003). High-quality coparenting relationships may model strong emotion regulation and communication skills for children. Moreover, supportive interparental relationships may

foster a sense of emotional security within the child that benefits their social-emotional development (Davies & Cummings, 1994). Coparents who provide more support to each other and do not undermine one another may also be better able to implement positive and effective parenting strategies and foster and maintain strong parent-child relationships.

Consistent with theory, coparenting is related to social functioning, internalizing, and externalizing symptoms in children above and beyond the effects of marital relationship quality and parent-child relationship quality (Teubert & Pinquart, 2010). As research on callous-unemotional behaviors has shown, parent-child relations have a critical effect on the development of C-U behaviors and whether these behaviors escalate into antisocial behaviors or whether the child develops stable and adaptive emotional and social behaviors (Waller & Hyde, 2017). Likewise, the quality of parents' coparenting relationship is likely to have an effect on whether the child develops healthy emotional and social behaviors or develops C-U behaviors as well (Waller & Hyde, 2017). However, as of now, no research has examined the potential contributions of coparenting relationship quality to young children's C-U behavior.

Research Questions and Hypotheses

The overarching goal of this research was to contribute to a better understanding of the origins of callous-unemotional behaviors in early childhood. In particular, I sought to better understand the contributions of child temperament, parenting, and coparenting to C-U behaviors during the early years of development. I focused on one major research question: How are children's temperament, mother-child relationship quality, and coparenting relationship quality linked to children's C-U behaviors? I was especially interested in whether the quality of the coparenting relationship would be associated with preschool aged children's C-U behaviors after taking into account the roles of child temperament and mother-child relationship quality.

I hypothesized that children with higher levels of temperamental surgency and negative affect would demonstrate more C-U behaviors, whereas children with higher temperamental effortful control would show fewer C-U behaviors. Regarding mother-child relationship quality, I expected mother-child relationships that were more positive and less conflictual to be related to fewer C-U behaviors among children. Finally, I anticipated that coparenting relationships characterized by greater supportive and less undermining behavior would also be related to lower levels of C-U behaviors among children.

Method

Participants and Procedure

The target participants of this study were couples with a child between the ages 4-7 years in the areas surrounding Columbus, OH and Cleveland, OH. This project considered the roles of both mothers and fathers (as coparents) in children's development; therefore, we recruited different-sex parenting couples. Eligible parents were required to be either married or cohabiting with the target child's other parent. Due to the need to isolate the associations between family dynamics and C-U behaviors among otherwise typically developing children, children with significant intellectual impairment or pervasive developmental delay were excluded from the study.

This study was reviewed and determined to be exempt by the Ohio State Institutional Review Board (Protocol # 2020E0879) on August 24, 2020. Recruitment took place via Facebook community groups and email from September 2020 to February 2021. These Facebook posts included information regarding inclusion criteria such as the age range of the target child and the cohabitation requirement for parents. Interested parties would either comment on the post, message the poster via Facebook's Messenger, email the poster, or call the poster via the

phone number and email listed on the flyer. Once families reached out, they were either sent a qualification survey via email or were asked the qualifying questions if discussing over the phone. If families met the requirements of having a child between ages 4 and 7, were married or cohabitating with their child's other parent, and were living within the required areas, then they were sent the password protected links for the Qualtrics surveys for the study via email. The questionnaires consisted of demographic questions and scales that sought to measure children's behavior, children's temperament, parenting, and coparenting (for further details, see *Measures* section below).

An a priori power analysis determined that a power level of 80% with an effect size (f^2) of 0.1 and 6 predictors, would be enough to detect a small effect size with 81 families. Therefore, in order to increase power and ensure a reasonable sample size, I aimed to recruit 100 families, or 200 parent participants. However, by the time I needed to analyze my data to complete my thesis, I had a total of 86 mothers and 35 fathers, for a total of 32 matched couples with completed surveys. Thus, I focused on the data contributed by the 86 mothers only for the analyses reported in this thesis.

The average age of participants was nearly 36 years for mothers (M = 35.60, SD = 5.02), and just under 5 years for children (M = 4.91, SD = 0.99). Mothers were mostly White (96.5%), with other race/ethnicity groups not proportionately represented (2.3% Black, 1.2% American Indian or Alaskan Native, 1.2% Other Asian). The average income across families was approximately $130,000 (SD: $107,000). 4.9% of mothers had a high school degree or GED, 4.1% had a vocational or technological program certificate, 11.4% had some college, 9.8% had an associate degree, 31.7% had a bachelor's degree, 32.5% had a master's degree, and 3.3% had a doctorate degree. 94.1% of mothers were married, with the other 5.9% cohabitating with their

child's father. 56.98% of target children identified as male according to maternal report (41.86% female, 1.16% other).

Measures

Children's C-U Behaviors.

Inventory of Callous-Unemotional Behaviors. In order to measure the child's C-U behaviors, we used the parent report for preschoolers version of the Inventory of Callous-Unemotional Traits (ICU; Frick, 2004). The ICU is composed of 24 items that are rated from not at all true (0) to definitely true (3) by parents. The subscales that compose this measure are callousness (11 items), uncaring (8 items), and unemotional (5 items) (Ciucci et al., 2014). An example of an item on the callousness subscale is "Does not care who he/she hurts to get what he/she wants". An example of an item on the uncaring scale is "Always tries his/her best" which is reverse coded. An example item on the unemotional subscale is "Hides his/her feelings from others". The ICU has shown expected associations with an alternate measure of C-U traits and measures of empathy, prosocial behavior, conduct problems, and aggression (Kimonis et al., 2016). Kimonis et al. (2016) determined that the parent-report version of the ICU is a reliable measure for assessing C-U behaviors in children aged 3-5 years, and provided evidence for the ICU's validity by demonstrating that children in this age range that were rated higher on the ICU by their parents were more likely to be aggressive and antisocial on existing scales. Another study composed of a general population sample of preschoolers found that the ICU is consistent in measuring C-U behaviors in preschool children (Ezpeleta et al., 2013). The reliability scores for mothers' reports on the ICU were acceptable within our sample (α = .79 callousness, α = .88 uncaring, α = .68 unemotional).

Child Temperament.

Child Behavior Questionnaire – Very Short Form. In order to measure the child's temperament, we used the 36-item Child Behavior Questionnaire - Very Short Form (CBQ-VSF), which is a reliable method for parents' assessment of their child's temperament from ages 3-7 (Putnam & Rothbart, 2006). The CBQ measures three aspects of temperament: effortful control (e.g., "Is good at following instructions"), surgency (e.g., "Often rushes into new situations"), and negative affect (e.g., "Is very difficult to soothe when s/he has become upset") using 12 items each (Rothbart et al., 2001). Items on the CBQ-VSF are responded to using a 7-point scale of 1-extremely untrue of my child to 7-extremely true of my child (Putnam & Rothbart, 2006). Overall, mothers' ratings for the child's temperament had acceptable reliability in the current sample (α = .82 negative affect, α = .79 surgency, α = .72 effortful control).

Parenting.

Child-Parent Relationship Scale. To assess the relationship between the mother and their child, we administered the Child-Parent Relationship Scale (CPRS; Pianta, 1995). The CPRS is a 30 question measure that uses a 5-point Likert scale (1 = *Definitely does not apply to me* to 5 = *Definitely applies to me*). The CPRS measures conflict (12 items), positive aspects of the relationship (10 items), and dependence (4 items) between the parent and child (Pianta, 1995). For the purposes of this study, I used the conflict (e.g., "Sees me as a source of punishment") and positive aspects of relationship (e.g., "Values his/her relationship with me") subscales. Reliability of mothers' reports of the child-parent relationship was acceptable in our sample (α = .89 conflict, α = .75 positive aspects of relationship).

Coparenting

Coparenting Relationship Scale. In order to measure coparenting, I used the Coparenting Relationship Scale (CRS; Feinberg, Brown, Kan, 2012). The CRS is a 35-item questionnaire that

consists of seven subscales that include (1) coparenting agreement, (2) coparenting closeness, (3) exposure to conflict, (4) coparenting support, (5) coparenting undermining, (6) endorsement of partner's parenting, and (7) division of labor. For this study, I focused on the undermining (e.g., "My partner does not trust my abilities as a parent") and support (e.g., "My partner asks my opinion on issues related to parenting") subscales (6 items each). Items are rated on a 7-point Likert scale (0 = *Not true of us* to 6 = *Very true of us*). This measure was shown to yield moderate agreement between mothers and fathers on overall coparenting quality as well as stability in reports of coparenting over time (Feinberg et al., 2012). For our sample, the coparenting support subscale reported by mothers had acceptable reliability (α = .80 support), although the Cronbach's alpha for mother's report of undermining was lower than expected (α = .51 undermining).

Analysis Plan

Following data collection, the data were cleaned and inspected for outliers and errors. Mothers who answered questions for a child outside our target age ranges were excluded. Parents who filled out less than 80% of the survey were also excluded. I then scored the survey measures and computed descriptive statistics (means, standard deviations) for all the key variables. To address my central research question, I computed correlations between mothers' reports of children's C-U behaviors and mother-reported child temperament (surgency, negative affect, effortful control), mother-child relationship quality (conflict, positive aspects), and coparenting relationship quality (support, undermining). Finally, to assess whether coparenting quality contributed to children's C-U behaviors above and beyond child temperament and the mother-child relationship, I used hierarchical regression analyses. All data management and analysis was conducted in IBM SPSS 27.0.

Results

Preliminary Analyses

As shown in Table A1, across all subscales of C-U behaviors, mean scores were very low (Callousness: *M* = 0.47, *SD* = 0.39; Uncaring: *M* = 1.10, *SD* = 0.60; Unemotional: *M* = 0.55, *SD* = 0.45). This means that mothers in my sample perceived their children as showing very low levels of C-U behaviors. Averages for the child temperament subscales were closer to the midpoint of the 1 to 7 scale, which is typical, although these mothers did rate their children as relatively higher in effortful control compared to negative affect or surgency (Surgency: *M* = 4.55, *SD* = 0.82; Negative affect: *M* = 4.01, *SD* = 0.97; Effortful control: *M* = 5.25, *SD* = 0.72). With respect to the parent-child relationship, mothers within our sample rated the conflict level with their child as very low (*M* = 0.54, *SD* = 0.53) and positive aspects of their relationship as relatively high (*M* = 4.40, *SD* = .46). Mothers' ratings of support felt within the coparenting relationship were high and ratings of undermining were extremely low (Support: *M* = 4.74, *SD* = 1.07; Undermining: *M* = 0.62, *SD* = 0.57).

Correlations are shown in Table A2. Notably, all aspects of C-U behaviors were correlated with each other, meaning that when a child scored high on one aspect of C-U behavior, they also scored high on the other subscales, whereas a child who scored low on one aspect of C-U behaviors also tended to score low on the other subscales of C-U behaviors. In contrast, the subscales of child temperament were not significantly correlated with one another, consistent with the idea that they measure distinct aspects of temperament. Conflict and positive aspects within the mother-child relationship were negatively and significantly correlated, as were support and undermining in the coparenting relationship. Greater child temperamental negative affect was associated with greater mother-child conflict, less supportive coparenting, and greater

undermining coparenting. Greater child effortful control was related to less mother-child conflict and a more positive mother-child relationship. Greater child temperamental surgency was positively and significantly correlated with greater undermining in the coparenting relationship. Finally, a more positive mother-child relationship was significantly associated with greater support and less undermining in the coparenting relationship, and a more conflictual mother-child relationship was associated with greater undermining as well.

Hypothesis Testing

Correlations (Table A2) indicated support for many of the expected relations of child temperament, mother-child relationship quality, and coparenting relationship quality with children's C-U behaviors. While child temperamental negative affect (Callousness: r = .22; Uncaring: r = .32) and effortful control (Callousness: r = -.35; Uncaring: r = -.53; Unemotional r = -.47) were significantly correlated with C-U behaviors in the expected directions, child temperamental surgency was not associated significantly with any aspect of C-U behaviors. Both aspects of the mother-child relationship were significantly associated with all three aspects of children's C-U behaviors. Mother-child conflict was positively associated with children's C-U behaviors (Callousness: r = .72; Uncaring: r = .56; Unemotional: r = .26). In contrast, positive aspects of the mother-child relationship were negatively associated with children's C-U behaviors (Callousness: r = -.39; Uncaring: r = -.47; Unemotional: r = -.65). Both aspects of coparenting were also associated with children's C-U behaviors in this sample. Supportive coparenting was negatively associated with C-U behaviors (Uncaring: r = -.28; Unemotional: r = -.27). On the other hand, undermining coparenting was positively associated with C-U behaviors (Callousness: r = .40; Uncaring: r = .28; Unemotional: r = .23).

Finally, I used hierarchical linear regression analyses (Table A3) to determine if coparenting relationship quality contributed to children's C-U behaviors above and beyond child temperament and mother-child relationship quality. I computed one linear regression equation for each of the three dependent variables (C-U behaviors subscales: callousness, unemotional, and uncaring). On step one of each regression equation, all three aspects of child temperament (surgency, negative affect, and effortful control) were entered as predictors. On the second step, the two aspects of the mother-child relationship (conflict and positive aspects of relationship) were entered. Finally, the third step included the two dimensions of the coparenting relationship (support and undermining) as predictors. For the regression equation predicting child callousness, each step explained significant variance in callousness, as indicated by the significant change in R-squared on each step (Table A3). On the first step, greater child temperamental effortful control was significantly related to lower child callousness. On the second step, greater mother-child conflict was significantly associated with higher child callousness. On the third step, elevated undermining coparenting was also significant related to greater child callousness. For the regression equation predicting child uncaring behaviors, the first two steps indicated significant change according to the R-squared. The R-squared of step 3 was not significant. On the first step, greater child temperamental negative affect was significantly related to higher child uncaring, while greater child temperamental effortful control was significantly related to lower child uncaring. For step 2, greater mother-child conflict was significantly related to higher child uncaring, and greater mother-child positivity was significantly related to lower child uncaring. On the third step, neither aspect of coparenting was significantly associated to child's levels of uncaring. For the regression equation predicting child unemotional behaviors, the first two steps indicated significant change according to the R-

squared of those two steps. For step 1, greater child temperamental effortful control was significantly associated with lower child unemotional behaviors. On the second step, greater mother-child positivity was significantly related to lower child unemotional behaviors. As for the third step, the coparenting relationship aspects were not related significantly to child unemotional behaviors.

Discussion

I set out to identify which factors contribute to C-U behaviors in young children. As the literature describes, both the child's temperament and aspects of the family environment contribute to C-U behaviors (Luthar, Cicchetti, & Becker, 2000). I sought to add to the literature by determining whether coparenting relationship quality is an aspect of the family environment that contributes to young children's C-U behaviors above and beyond the child's temperament and mother-child relationship. Based on the results of this study, it does appear that the quality of the coparenting relationship contributes to children's C-U behaviors above and beyond more typically studied factors.

Consistent with my hypotheses regarding child temperament and prior research (Elizur et al., 2017; Ezpeleta et al., 2013), children's negative affect and effortful control were correlated with C-U behaviors in expected directions, such that greater child negative affect was associated with greater C-U behaviors, and greater child effortful control was associated with lower C-U behaviors. However, in contrast to my expectations, child surgency was not associated with any aspect of C-U behaviors, despite existing literature indicating that greater surgency tends to predict Oppositional Defiant Disorders in young children (Zastrow et al., 2018). This difference in results may be attributed to the differences in scales used to measure temperament between my study and Zastrow and colleagues' (2018) study.

Limitations

The findings of this study should be considered in light of its limitations. My sample was made up of community volunteers, and therefore, these mothers reported very low levels of C-U behaviors in their children, as well as very low levels of mother-child conflict and undermining coparenting. Therefore, a lack of variability within our sample may have been an issue, and this may have in part contributed to the low reliability of the undermining coparenting scale. In addition, measuring C-U behaviors in preschool-aged children is challenging. The scale we used, the Inventory of Callous-Unemotional Traits, did have reasonable reliability in my sample, but it was not originally developed to measure C-U behaviors among such young children. Another challenge I faced was that data collection had to be completed online due to the COVID-19 pandemic, which is also a limitation as I had more difficulty reaching a diverse population, which is evident in the lack of racial/ethnic diversity and socio-economic diversity in my sample. Having to recruit online in the context of the Covid-19 pandemic also likely contributed to a smaller sample size than I had originally planned.

Future Research

Including Fathers

A strength of this study was the inclusion of fathers' roles in the development of C-U behaviors through mothers' reports of how undermined or supported she felt in the coparenting relationship with her child's father. Given that the coparenting relationship was found to be important to understanding children's C-U behaviors, even when considering the child's temperament and mother-child relationship, it is clear that interparental relationships are important to consider when studying C-U behaviors. Therefore, including fathers in C-U behavior research is important. However, due to the small sample of fathers who completed my

survey I was unable to include their perspectives on the coparenting relationship in the current study.

In addition, future research should consider the quality of the father-child dyadic relationship in addition to the mother-child and coparenting relationships. One existing study took data from the biological mother, adoptive father, and adoptive mother into consideration when exploring C-U behaviors (Trentacosta et al., 2019). Data were collected from adoptive parents when the children were ages 18, 27, and 54 months, and collected from the biological mother at three- and six-months post-partum and when the child was 56 months old (Trentacosta et al., 2019). In this study, it was found that both adoptive mothers' harsh parenting and adoptive fathers' harsh parenting had reliable associations with C-U behaviors among children at higher inherited risk of C-U behaviors (Trentacosta et al., 2019). Another study, conducted by Waller et al. (2018), included both mother and father reports of children's behaviors. Both mothers' and fathers' harshness towards the child were also reported and it was found that parents' increased harshness towards one of the twins had an association with that child's aggression (Waller et al., 2018); the twin that received harsher parenting was also the twin who was more aggressive (Waller et al., 2018). Based on the findings of these two studies, and the findings of my study, fathers' roles in the development of C-U behaviors in young children should be taken much more seriously in future research. Although I had originally intended to include fathers' reports of their relationship with their child in my analyses, again, I had so few fathers respond to my survey that I was unable to include their reports at this time.

Interactions Between Child Temperament and Coparenting

A child's temperament often interacts with the caregiving system and can also affect the child's social and emotional development, and some individuals are more susceptible to the

effects of their rearing experiences and environment (Belsky & Pluess, 2009; Cox & Paley, 2003). This means that these individuals are both more likely to be adversely affected by unsupportive parenting and to benefit from supportive parenting, and this is known as differential susceptibility (Belsky & Pluess, 2009). As discussed in Glenn (2018), some children are more likely, due to biological reasons, to have behaviors that can be changed by certain parenting styles, so it is possible that warm parenting and a stable coparenting relationship between parents may help to prevent callous-unemotional traits from developing in at least a portion of children who are temperamentally susceptible. In other words, genetic and environmental factors likely interact to increase the likelihood a child develops C-U behaviors.

Though I originally set out to explore the potential interaction effects of child's temperament and family environment in relation to children's C-U behaviors, my sample size was not large enough to test these interactions reliably. However, testing and considering these interactions is an important future direction to consider as the literature regarding differential susceptibility points to the interplay between child temperament and family relationships being critical to our understanding of children's social-emotional development.

Longitudinal Study

My final suggestion for future research is a longitudinal study to examine the likely transactional relations between C-U behaviors and aspects of the family environment such as parent-child and coparenting relationships. Existing literature suggests that the associations between C-U behaviors and parenting can be reciprocal. Whereas parenting can affect C-U behaviors by either decreasing child C-U behaviors or worsening them, child C-U behaviors also tend to change the quality of parenting and the family environment (Hawes et al., 2011).

Notably, intervention program studies showed that when C-U behaviors are improved in children, marital relations often improve as well (Somech & Elizur, 2012).

Conclusion

It is important that we continue to attempt to understand the roles of child and family environmental factors in the development and maintenance of C-U behaviors beginning in early childhood. Once a better understanding of the origins of C-U behaviors is gained, stronger preventative measures and interventions can be put into place to help reduce the likelihood that children's C-U behaviors persist and transform into antisocial behaviors later on in development. Further contributing to the C-U behaviors literature is important because the more we know about the origin of C-U behaviors, the better we can prevent future antisocial tendencies, which can be costly to individuals, families, and society.

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Appendix A

Table A1. Descriptive Statistics

	M	*SD*	Min	Max	Skewness	Kurtosis
Child C-U Behaviors						
Callous	0.47	0.39	0.00	1.89	1.04	1.19
Uncaring	1.10	0.60	0.00	2.38	0.07	-1.07
Unemotional	0.55	0.45	0.00	1.80	0.77	0.33
Temperament						
Surgency	4.55	0.82	2.75	6.25	-0.05	-0.29
Negative Affect	4.01	0.97	1.42	5.91	-0.41	-0.15
Effortful Control	5.25	0.72	3.25	6.82	-0.38	-0.62
Mother-Child Relationship Quality						
Conflict	0.54	0.53	.00	2.25	1.35	1.22
Positive Aspects	4.40	0.46	2.60	5.00	-1.69	3.77
Coparenting Relationship Quality						
Support	4.74	1.07	1.50	6.00	-0.85	0.29
Undermining	0.62	0.57	0.00	2.67	1.01	0.92

Table A2. Correlations

Variable	1	2	3	4	5	6	7	8	9	10
1. Callousness	--	.66**	.41**	.02	.22*	-.35**	.72**	-.39**	-.21^{+}	.40**
2. Uncaring		--	.62**	-.04	.32**	-.53**	.56**	-.47**	-.28**	.28**
3. Unemotional			--	-.08	.03	-.47**	.26*	-.65**	-.27*	.23*
4. Surgency				--	-.10	.18	.17	.07	-.08	.22*
5. Negative Affect					--	-.12	.42**	-.17	-.34**	.27*
6. Effortful Control						--	-.28**	.26*	.10	-.18^{+}
7. Conflict							--	-.31**	-.19^{+}	.30**
8. Positive Aspects of Relationship								--	.31**	-.27*
9. Coparenting Support									--	-.46**
10. Coparenting Undermining										--

$^{+}p < .10$ $*p < .05$ $**p < .01$

Table A3. Hierarchical Regressions Predicting Child C-U Behaviors

	Callousness			*Uncaring*			*Unemotional*		
	β	ΔR^2	*F*	β	ΔR^2	*F*	β	ΔR^2	*F*
Predictors									
Step 1		.16**	16.36**		.35**	11.97**		.20**	12.06**
Surgency	.11			.08			-.00		
Negative Affect	.18^{+}			.28**			.01		
Effortful Control	-.34**			-.49**			-.45**		
Step 2		.41**			.18**			.32**	
Mother-Child Conflict	.70**			.33**			.01		
Mother-Child Positive	-.15^{+}			-.26**			-.58**		
Step 3		.04*			.01			.01	
Support	.00			-.10			-.12		
Undermining	.23*			-.02			.00		

Note. $^{+}p < .10$ $*p < .05$ $**p < .01$.